

U.S.S.N. 10/050,375

Remarks

One important parameter for thermoplastic compositions is that they be processable using hot melt processing equipment (e.g., coaters and extruders). Applicants have made the surprising discovery that the addition of spherical superabsorbent particles having a particle size from 20 μm to 30 μm to a thermoplastic composition unexpectedly results in a significant decrease in viscosity in the composition relative to a composition formulated with the same amount of superabsorbent particles having a relatively greater particle size or particles of a similar size that are nonspherical. As a result, the thermoplastic composition can be formulated to include a greater concentration of superabsorbent particles, which in turn results in a composition that has a greater absorbent capacity. These properties can be achieved while maintaining a composition that can be processed using standard hot melt processing equipment.

It is noteworthy that superabsorbent particles decompose when subjected to high temperatures. The superabsorbent particles available under the AQUAKEEP series of trade designations, for example, begin to thermally decompose at 300°C and become thermally degraded at temperatures above 150°C (i.e., 302°F). Therefore, it is desirable to maintain thermoplastic compositions that include superabsorbent particles at a temperature less than 300°F, or even less than 250°F while the composition is in an application tank (see the attached Declaration of Fouad D. Mehawej, para. 8).

Claims 1, 22, 24-27 and 38 have been amended. Claim 41 has been added. Claim 41 is original claim 4 rewritten in independent form. Support for the amendments to claims 1, 22, 24-27 and 38 can be found in general throughout Applicants' Specification and in particular, for example, as follows: claims 1, 27 and 38, page 5, lines 11-12; claims 22 and 24-26, page 7, line 23.

Claims 1-27 and 33-40 stand rejected under 35 U.S.C. § 103 over EP 1013291 A1 (Luizzi) in view of Sumitomo Seika, Super Absorbent Polymer AQUAKEEP product literature (Sumitomo).

Luizzi discloses a hot melt adhesive that is capable of absorbing liquids. Luizzi broadly discloses that the composition can include a block copolymer, tackifying resin, aqueous liquid absorbing polymer, plasticizer and antioxidant. Luizzi also discloses that

U.S.S.N. 10/050,375

the composition can include superabsorbent particles, and provides two sample compositions, each of which includes superabsorbent particles.

The Sumitomo product literature describes properties of seven grades of superabsorbent particles. The Sumitomo product literature explains that the superabsorbent particles available under the AQUAKEEP series of trade designations begin to thermally decompose at 300°C and become thermally degraded at temperatures above 150°C (i.e., 302°F).

Claim 1 is directed to a thermoplastic composition that includes from about 1 % by weight to 25 % by weight block copolymer having the formula (A-B)_x or A-B-A where the A block comprises polyvinylarene, the B block comprises poly(monoalkenyl), and x is an integer of at least one, from about 45 % by weight to about 75 % by weight superabsorbent polymer particles comprising polyacrylate and having a median particle diameter of from 20 μm to 30 μm, and from about 15 % by weight to about 40 % by weight plasticizing oil. Luizzi broadly discloses that the superabsorbent material is preferably a superabsorbent particle having an average particle size less than 150 μm (see Luizzi, page 4, lines 33-35). Luizzi discloses that an example of such a material is AQUAKEEP J-550P. Applicants obtained a sample of the AQUAKEEP J-550P particles (see Declaration of Fouad D. Mehawej, para. 2). Two electron micrographs, having a scale of one inch equals 200 μm and one inch equals 50 μm, respectively, were taken of the AQUAKEEP JP-550P superabsorbent particles and are attached at Tab 1 (*Id.* at para. 3).

There is nothing in the Sumitomo product literature that directs the skilled artisan to select the AQUAKEEP 10SH-NF over any other superabsorbent particle disclosed therein. For example, the AQUAKEEP 10SH-P exhibits a rate of absorption that is better than the AQUAKEEP 10SH-NF. In addition, the AQUAKEEP 10SH-P has a greater range of absorption capacity for water and saline relative to the AQUAKEEP 10SH-NF. Furthermore, both the AQUAKEEP 10SH-P and AQUAKEEP J-550P are granular particles, whereas AQUAKEEP 10SH-NF are spherical particles. The Sumitomo product literature also lists a "main application" for AQUAKEEP 10SH-P as being incontinent pads, whereas no such mention is made with respect to the AQUAKEEP 10SH-NF (see Sumitomo product literature, page 8). Therefore, the skilled artisan would have no

U.S.S.N. 10/050,375

reason to select the AQUAKEEP 10SH-NF over the AQUAKEEP 10SH-P for inclusion in the hot melt composition of Luizzi. Applicants submit, therefore, that the rejection of claim 1 under 35 U.S.C. § 103 over Luizzi in view of the Sumitomo product literature is unwarranted and request that it be withdrawn.

Applicants further submit that the inclusion of spherical particles having a particle size from 20 μm to 30 μm unexpectedly produces a thermoplastic composition having a significantly lower viscosity relative to a composition having nonspherical particles. To demonstrate, Applicants prepared two compositions. The first was Sample B of Luizzi and it included the specified AQUAKEEP J550P particles (see Declaration of Fouad D. Mehawej, para. 4). The second composition, which is referred to herein as "Composition X," was prepared according to the composition of Sample B of Luizzi with the exception that AQUAKEEP 10SH-NF spherical superabsorbent particles having a particle size from 20 μm to 30 μm were included instead of the AQUAKEEP J550P particles (*Id.* at para. 5). The viscosity of each composition was measured according to the viscosity test method set forth in the Applicant's Specification with the following exception. The viscosity of Luizzi Sample B could not be measured using a number 27 spindle (*Id.* at para. 6). Therefore, the viscosity of both Sample B and Composition X was measured using a number 29 spindle. The viscosity of the Luizzi Sample B measured using a number 29 spindle at 300°F is 150,000 centipoise and the viscosity of Composition X is 66,000 centipoise (*Id.* Table). The viscosity of Luizzi Sample B is more than two times the viscosity of Composition X. This significant decrease was unexpected (*Id.* at para. 7). In addition, nothing in Luizzi or the Sumitomo product literature suggests that such a significant decrease in viscosity would occur by simply substituting spherical superabsorbent particles having a particle size from 20 μm to 30 μm for the particles of Luizzi. Applicants submit, therefore, that the rejection of claim 1 under 35 U.S.C. § 103 over Luizzi in view of Sumitomo has been overcome and respectfully request that it be withdrawn.

Claims 2-27 and 33-40 are distinguishable under 35 U.S.C. § 103 over Luizzi in view of Sumitomo over for at least the same reasons set forth in distinguishing claim 1.

In addition claims 41 (original claim 4) and claim 39 are further distinguishable over Luizzi and Sumitomo for at least the following additional reasons. Claim 41, which

U.S.S.N. 10/050,375

is original claim 4 rewritten in independent form requires the presence of from 60 % by weight to 75 % by weight superabsorbent polymer particles. To establish a *prima facie* case of obviousness based upon a proposed combination of references the record must establish that there is a teaching, suggestion or motivation in the prior art for making the proposed combination. See Fromson v. Anitec Printing Plates, Inc., 132 F.3d 1437 (Fed. Cir. 1997); C.R. Bard, Inc. v. M3 Sys., Inc., 157 F.3d 1340, 1352, (Fed. Cir. 1998). Here no such teaching, suggestion or motivation exists. Luizzi does not teach or suggest a thermoplastic composition that includes from 60 % by weight to 75 % by weight superabsorbent polymer particles. The only mention Luizzi makes regarding an amount of superabsorbent polymer particles is in the compositions of his Samples A and B, which are described as including 40 % and 45 % superabsorbent polymer particles, respectively. Luizzi broadly discloses that the composition can include from about 1-60 % aqueous liquid absorbing polymer. However, Luizzi expressly distinguishes aqueous liquid absorbing polymers from superabsorbent particles (see, e.g., Luizzi, page 3, lines 45-46 Samples A and B and claim 5). In particular, Luizzi describes his composition at page 3 lines 40-45 and then states, "the hot melt adhesives of the present invention may optionally contain ...superabsorbent particles." (Emphasis added). Luizzi also discusses supersorbent polymers in a paragraph that is separate from the discussion regarding aqueous liquid-absorbing polymers (see *Id.* at para. [0018]). In addition, in claim 5 Luizzi states that the composition "further contains ... super absorbent particles." Thus Luizzi's broad disclosure pertaining to the amount of aqueous liquid-absorbing polymer does not constitute a teaching of an amount of superabsorbent particles.

Sumitomo does not cure the deficiencies of Luizzi. Sumitomo does not teach or suggest anything about formulating a thermoplastic composition. Thus the record fails to establish a *prima facie* case of obviousness of claim 4, now claim 41, over Luizzi in view of Sumitomo. Accordingly, Applicants submit that the rejection of claim 41 under 35 U.S.C. § 103 over Luizzi in view of Sumitomo is unwarranted and request that it be withdrawn. Should this rejection be maintained, Applicants respectfully request that the location of the teaching, suggestion or motivation be identified, by column and line number, in the next Office action.

U.S.S.N. 10/050,375

Claim 39 is directed to a thermoplastic composition that includes a block copolymer having the formula (A-B) x or A-B-A where the A block comprises polyvinylarene, the B block comprises poly(monoalkenyl), and x is an integer of at least one, from about 45 % by weight to about 75 % by weight superabsorbent polymer particles comprising polyacrylate, and from about 15 % by weight to about 40 % by weight plasticizer. The composition exhibits a viscosity of no greater than about 65,000 centipoise at 300°F (149°C) (emphasis added). Luizzie does not teach or suggest a composition that includes 1) from about 45 % by weight to about 75 % by weight superabsorbent polymer particles and 2) exhibits a viscosity of no greater than about 65,000 centipoise at 300°F. The viscosity of Sample B of Luizzi, the only composition of Luizzi that includes 45 % by weight superabsorbent polymer particles, is not reported. Applicants prepared the Luizzi composition of Sample B and measured its viscosity at 300°F. The composition has a viscosity of 150,000 centipoise at 300°F when measured using a number 29 spindle (see the table in the Declaration of Fouad D. Mehawej). Thus, Luizzi does not teach the composition of claim 39. Luizzi also does not suggest such a composition or how to achieve such a composition. Nothing in the record establishes anything to the contrary.

Sumitomo does not cure the deficiencies of Luizzi. Nothing in Sumitomo teaches or suggests anything about formulating a thermoplastic composition –let alone achieving a composition that has a viscosity of no greater than about 65,000 centipoise at 300°F. Therefore the skilled artisan would not think to modify Luizzi to achieve the composition of claim 39. Applicants submit, therefore, that a *prima facie* case of obviousness of claim 39 over Luizzi in view of Sumitomo has not been made. Accordingly, the rejection of claim 39 under 35 U.S.C. § 103 over Luizzi in view of Sumitomo is unwarranted and Applicants request that it be withdrawn. Should this rejection be maintained, Applicants respectfully request that the location of the teaching, suggestion or motivation be identified, by column and line number, in the next Office action on the merits.

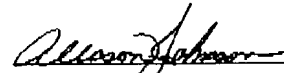
The claims now pending in the application being in a condition for allowance, such action is respectfully requested. If the Examiner determines that the claims are other than allowable, a teleconference interview is respectfully requested.

U.S.S.N. 10/050,375

Please charge any additional fees that may be required or credit any overpayment made to Deposit Account No. 06-2241.

Respectfully submitted,

Date: February 26, 2004



Allison Johnson
Reg. No. 36,173
On behalf of H.B. Fuller Company

Allison Johnson, P.A.
6016 Logan Ave. S.
Minneapolis, MN 55419
Telephone (612) 861-8621
Facsimile (612) 861-8628